

CLAIMS

1. A process of making a dry powder formed of primary particles, or aggregates of primary particles, of a polymer wherein the primary particles have a size below 20 μ m and
5 the powder can dissolve or swell in water to form a clear gel, the process comprising
forming an emulsion of aqueous ethylenically unsaturated cationic monomer in non-aqueous liquid optionally in the presence of an emulsifier,
10 initiating polymerisation and allowing polymerisation to complete,
distilling water from the emulsion until the emulsion is substantially dry, the distillation being conducted while maintaining a sufficient amount of non-aqueous liquid
15 in the emulsion to prevent breakage of the emulsion,
separating the non-aqueous liquid from the polymer particles by a process comprising washing the substantially dry emulsion, or a slurry or cake of dry polymer particles separated from it, with a volatile organic solvent which is
20 a solvent for the non-aqueous liquid and for the emulsifier (if used) and which does not dissolve or swell the polymer particles and which is substantially miscible with water,
separating the washed polymer particles as a cake or slurry of the polymer particles wetted by the solvent,
25 and evaporating the solvent from the cake or slurry and thereby providing the dry powder.
2. A process according to claim 1 in which the polymer is a cationic polymer.
3. A process according to claim 1 or claim 2 in which
30 volatile non-aqueous liquid is added to the emulsion after the polymerisation and before or during the distillation of water from the emulsion.
4. A process according to any preceding claim in which the amount of the volatile solvent utilised for washing the
35 substantially dry emulsion or the polymer particles separated from the dry emulsion is from 85 to 99%,

preferably 90 to 98%, based on the weight of solvent and polymer.

5. A process according to any preceding claim in which the amount of the volatile solvent in the slurry or cake which is subjected to the evaporation is at least 50% by weight based on the weight of solvent and polymer.

6. A process according to any preceding claim in which the volatile solvent is isopropyl alcohol.

7. A process according to any preceding claim in which the concentration of monomer in the emulsion is below 70% by weight based on the weight of monomer and water and the emulsion contains 35 to 55% by weight of the monomer, 20 to 45% by weight of the volatile non-aqueous liquid and 20 to 40% by weight of the water, all based on the weight of monomer, volatile non-aqueous liquid and water.

8. A powder formed of particles, or aggregates of particles, of a cationic polymer wherein the product can dissolve or swell in water to form a gel, characterised in that the particles have a size below $20\mu\text{m}$ and have the characteristic, substantially spherical, shape of polymer particles made by reverse phase emulsion polymerisation, and the composition gives a 0.5% gel in water at a gelling pH wherein the gel clarity is at least 90% at 430nm.

9. A product or process according to any preceding claim in which the cationic polymer is a cationic polymer of 50 to 100 mole percent of a water soluble cationic ester of methacrylic acid, 0 to 50 mole percent other water soluble ethylenically unsaturated monomer, and optionally cross linking agent, and in which the polymer is preferably a cross linked homopolymer of the methyl chloride quaternary salt of dimethylaminoethyl methacrylate.

10. A personal care composition thickened by a composition made by a process according to claim 1 or a product according to claim 8.